

IOWA COMMUNITY COLLEGES EMPLOYMENT OUTCOMES

Noncredit Career and Technical Education (CTE) Programs

SEPTEMBER 2018



ACADEMIC YEAR
2015-2016



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

**IOWA DEPARTMENT
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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

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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 first 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 are breaking 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) 2015/2016.

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.



53.5% of noncredit students were male compared to **45.9%** of credit students.



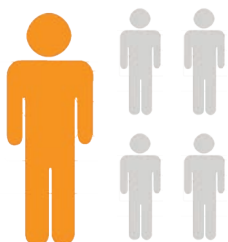
63.4% of noncredit students were 25 years or older compared to **21.7%** of credit students.



25.7% of noncredit students were of a racial or ethnic minority group compared to **21.7%** of credit students.

Continue Education

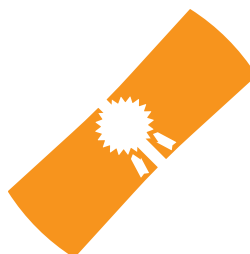
Noncredit CTE programs often lead to enrollment in credit programs, support credit students on their educational journeys, and help degree holders build and enhance current marketplace skills.



21.5% of noncredit students continue into credit-bearing programs.



Of those who continue into credit programs, **84.0%** did so at an Iowa college or university.



10.5% of noncredit students hold previously earned postsecondary degrees.

Top 10 Noncredit Programs

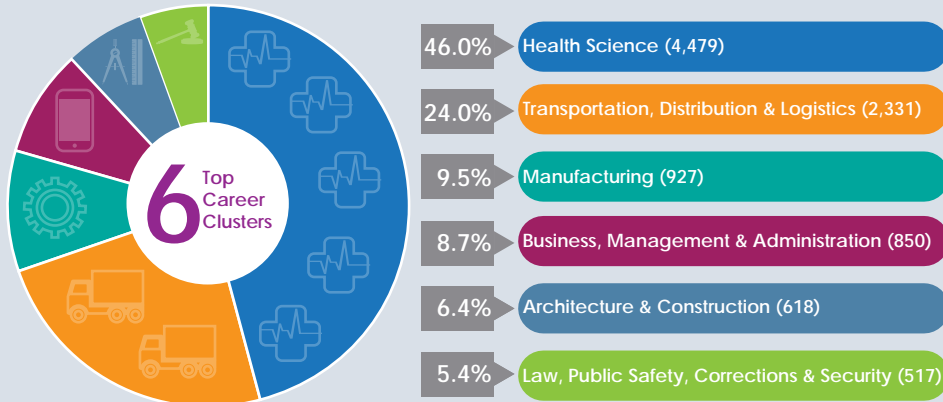


Health care and transportation programs comprise the highest noncredit CTE enrollments at Iowa community colleges.



Top Career Clusters

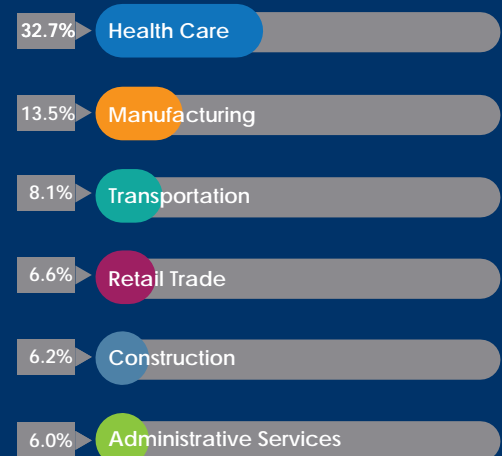
The National Career Clusters Framework organizes CTE programs into 16 career clusters. The top career clusters by noncredit enrollment are health science and transportation, distribution, and logistics.



Top Industries for Employment



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

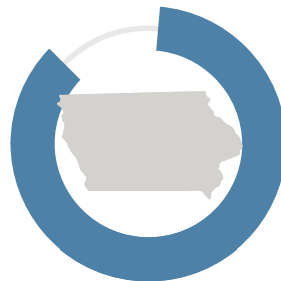


Employment

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



91.8% of noncredit students were employed in the first year following exit from their programs.



84.5% 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 (first edition), is the first 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 has 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 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 has become the new minimum threshold for Americans to earn a living wage and attain middle-class status. In 1973, only 28 percent of U.S. jobs required education beyond a high school diploma; by 2025, almost two out of three jobs in the nation 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 2015/2016, for Kirkwood Community College (KCC), was 6,809 students, and noncredit enrollments represented 26.6 percent of that total. The noncredit



RESEARCH HIGHLIGHT

Noncredit CTE Enrollment

Of the 244,745 noncredit program enrollments at Iowa's community colleges during AY 2015/2016, nearly half (47.6 percent), or 116,540, were in noncredit career and technical education programs.

enrollments for both North Iowa Area Community College (NIACC) and Northeast Iowa Community College (NICC) represented 61.0 percent of the total CTE enrollments at each of those colleges.

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 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 2015/2016)**

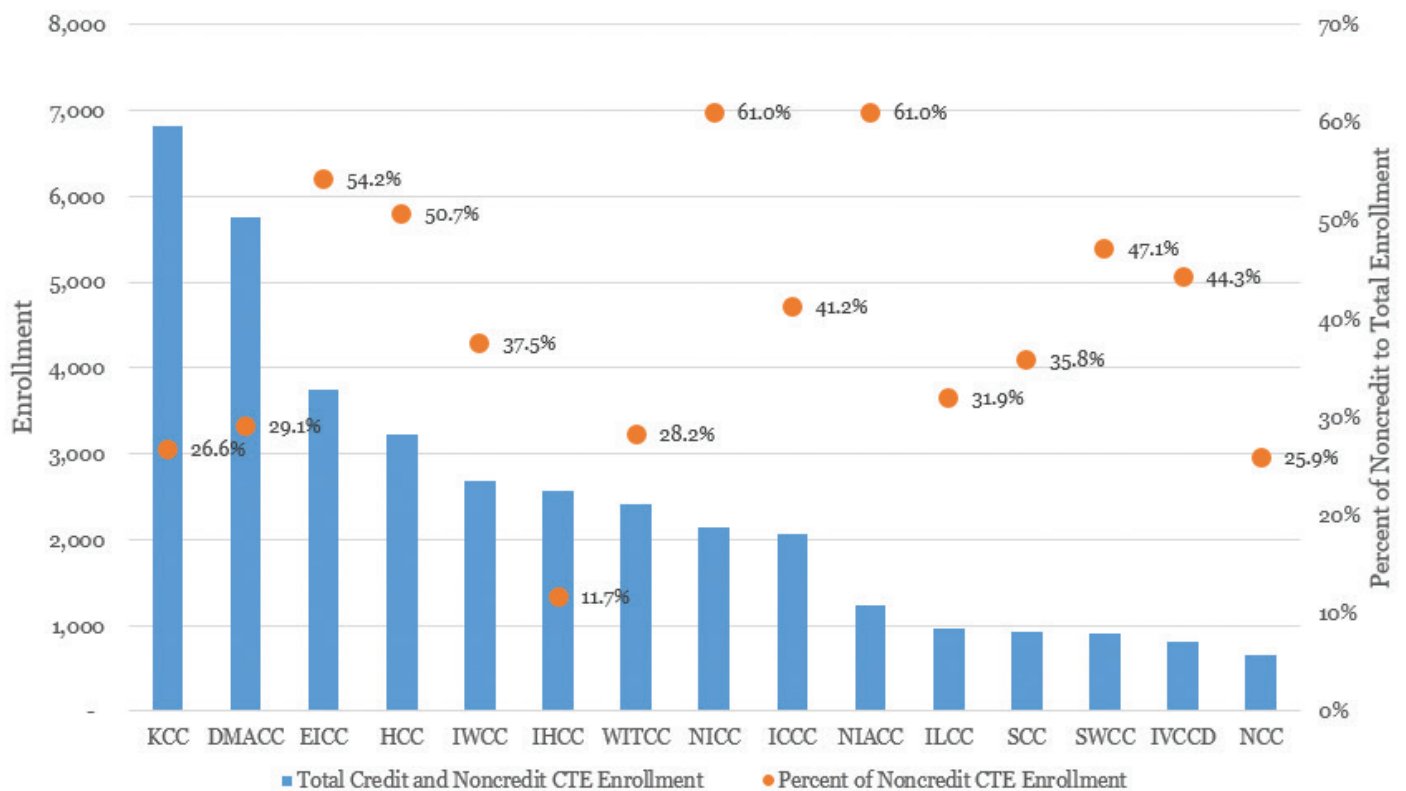


Figure 1 Abbreviation Key:

- 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
- ICCC - 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 244,745 enrollments in the 2015/2016 academic year (AY 2015/2016). Of those, there were 116,540 noncredit Career and Technical Education (CTE) enrollments (47.6 percent).

For data consistency, it was necessary to establish criteria 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 that has proven labor market value. Additionally, programs are 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 be enrolled 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. Matching to Unemployment Insurance (UI) wage records is conducted using SSNs, and birthdates are needed to match to the National Student Clearinghouse (NSC). This process limited the analysis to 10,551 students out of the 13,645 enrolled in noncredit CTE programs with at least 32 contact hours.

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 college. These individuals may have transferred from one community college to another, continued their 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 the records to the UI wage records. This match provided 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

Three periods of time are analyzed 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 to maintain confidentiality 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, Methodology and Research Limitations, Data Field Formation, Program of Study (POS).

Demographics of Noncredit CTE Students

Of the 10,551 noncredit CTE students studied, over half (52.5 percent) were male (N=5,543) and 4,818 were female. Additionally, there was a small number of students who did not indicate gender (N=190).

The students were divided into two age groups, under 25 years of age and 25 years or older. Two-thirds of noncredit students were age 25 years or older (N=6,685) and 3,866 were under the age of 25.

Race/ethnicity was also identified; however, a significant number of students (N=3,643) did not report race/ethnicity. Of the 6,908 who did report, 74.3 percent were white/non-Hispanic (N=5,130), and 1,778 were minority students.

FIGURE 2. AGE GROUPS BY GENDER: AY 2015/2016

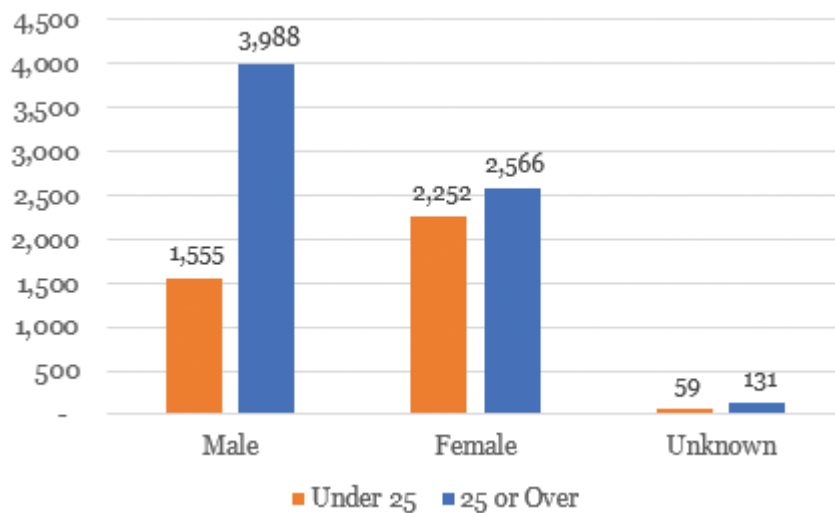
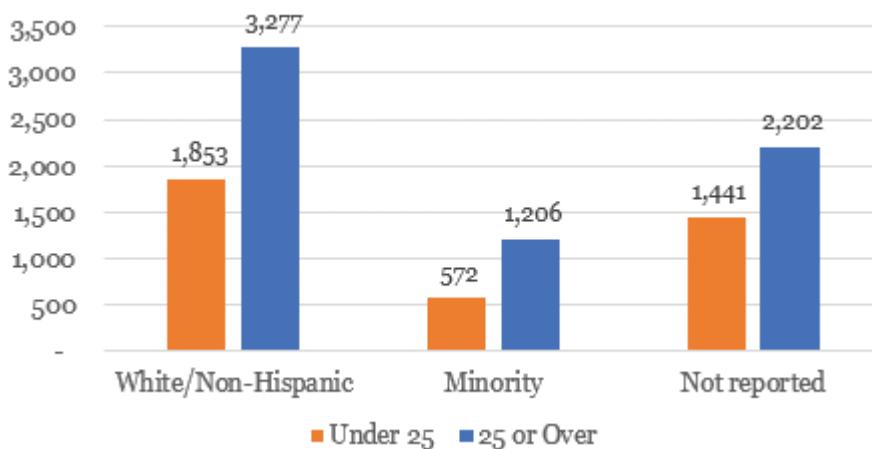


FIGURE 3. AGE GROUPS BY RACE/ETHNICITY: AY 2015/2016



DEMOGRAPHICS

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



AGE

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



GENDER

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



RACE/ETHNICITY

- » 25.7 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=4,563), followed by Transportation and Materials Moving (N=2,112).



RESEARCH HIGHLIGHT

High Program Enrollment

Of the 10,551 students who were matched through the National Student Clearinghouse, 43.2 percent were enrolled in health-related noncredit CTE programs, followed by 20.0 percent in noncredit CTE transportation and materials moving programs.

FIGURE 4. NONCREDIT CTE PROGRAMS BY 2-DIGIT CIP, GENDER, & AGE: AY 2015/2016

CIP Description	Under Age 25			Age 25 and Older			Total
	Male	Female	Unknown	Male	Female	Unknown	
Health Professions and Related	344	2,074	35	438	1,614	58	4,563
Transportation and Materials Moving	551	46	4	1,308	192	11	2,112
Business Management, Marketing, and Related	52	35	5	451	423	12	978
Precision Production Trades	165	16	6	390	69	8	654
Engineering Technologies and Engineering Related	85	11	-	408	71	9	584
Mechanics and Repairers, General	118	9	-	429	19	7	582
Homeland Security, Law Enforcement, Firefighting, and Related Protective Services	155	21	8	296	27	16	523
Construction Trades	44	7	-	105	10	5	171
Computer and Information Sciences and Support Services	11	3	-	70	35	-	119
Education	2	9	1	18	33	-	63
Family and Consumer Science/Human Services	3	9	-	9	39	3	63
Agriculture	14	-	-	26	1	2	43
Personal and Culinary Services	7	3	-	20	1	-	31
Communications Technologies/Technicians and Support Services	2	8	-	8	12	-	30
Foreign Languages, Literatures, and Linguistics	-	-	-	6	11	-	17
Visual and Performing Arts	2	-	-	5	-	-	7
Communication, Journalism and Related	-	-	-	1	5	-	6
Legal Professions and Studies	-	-	-	-	4	-	4
Parks, Recreation, Leisure, and Fitness Studies	-	1	-	-	-	-	1
Total	1,555	2,252	59	3,988	2,566	131	10,551

Females dominate enrollment in the health profession programs (82.5 percent), whereas males represent 88.7 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=46 to N=192).

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 occupations such as precision trades, transportation, mechanics, and law enforcement. For more information related to the programs listed below and relationships to in-demand occupations, refer to Figures 28-30 later in this report.



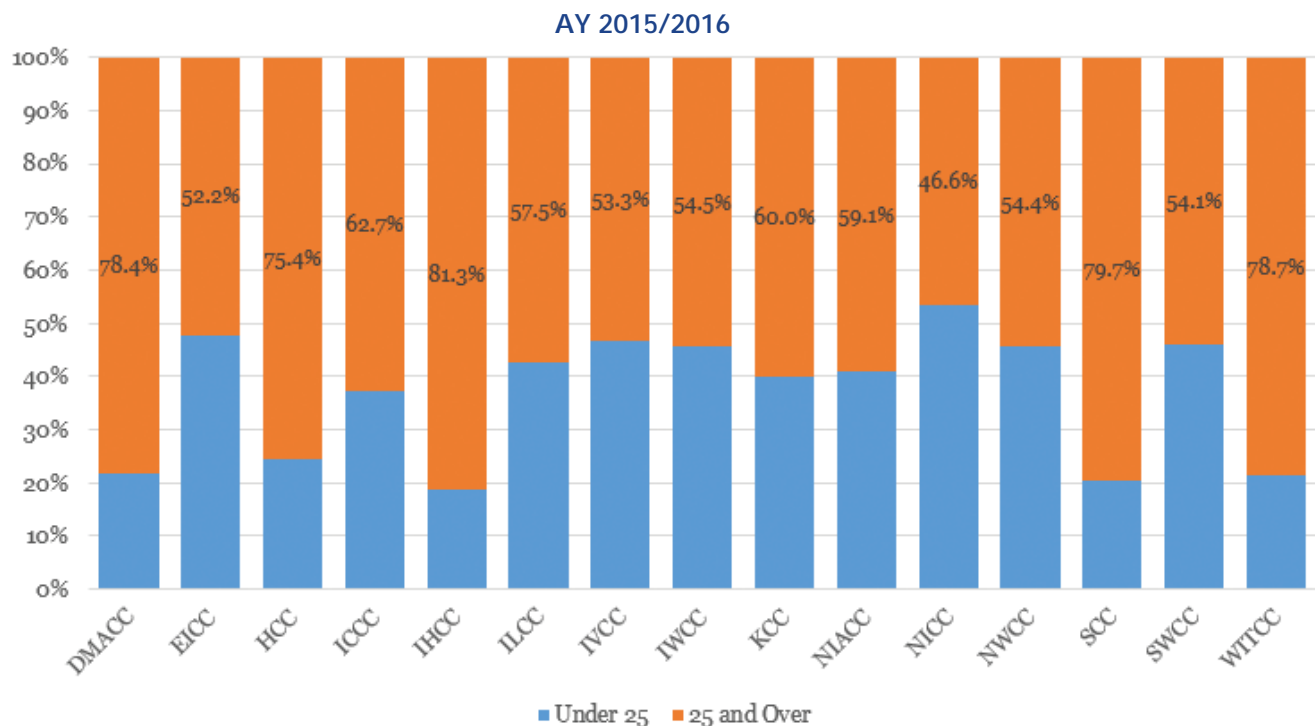
RESEARCH HIGHLIGHT

Number of Contact Hours

The majority of students, 63.3 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 five colleges, over 75 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 (66.0 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 8.9 percent in programs that were over 200 contact hours. Similarly, 61.7 percent of those 25 years of age or older enrolled in programs that were 32 to 99 contact hours, 24.9 percent enrolled in 100 to 200 contact hours, and 13.4 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	2,553	66.0	967	25.0	346	8.9
25 Years of Age and Older	4,125	61.7	1,666	24.9	894	13.4
Total	6,678	63.3	2,663	25.0	1,240	11.8

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 enrolled in credit programs the first year following exit from their noncredit program (N=2,281). This distribution includes students who were enrolled in credit programs previously, during, and following their noncredit program enrollment.



RESEARCH HIGHLIGHT

Credit-Bearing Programs

More than one-fifth (21.5 percent) of all noncredit CTE students continued their education in credit-bearing programs.

The majority of students (68.5 percent) who continued their education were under age 25 (N=1,563). Most of this group went on to credit-bearing programs at an in-state institution (N=1,343), while only 14.1 percent (N=220) of students continued their education at out-of-state institutions.

Of those under age 25 who continued their education in-state, 885 (56.6 percent) continued their education at a two-year public college and 16.4 percent transferred to public four-year institutions.

**FIGURE 7. FURTHER CREDIT EDUCATION, FIRST YEAR FOLLOWING NONCREDIT EXIT:
AY 2015/2016 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>						
2017	2 yr	Private	0	0.0	1	0.1
		Public	885	56.6	76	4.9
	4 yr	Private	199	12.7	61	3.9
		Public	259	16.6	82	5.2
Total 2016 Cohort Under 25			1,343	85.9	220	14.1
<i>25 Years of Age and Older</i>						
2017	2 yr	Private	0	0.0	1	0.1
		Public	482	67.1	50	7.0
	4 yr	Private	58	8.1	61	8.5
		Public	34	4.7	32	4.5
Total 2016 Cohort 25 and Older			574	79.9	144	20.1

The out-of-state enrollment of students age 25 and over is greater than that of students under age 25 with 20.1 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, 482 (67.4 percent) continued their education at one of Iowa’s community colleges, and only 4.7 percent transferred to a public four-year institution.

Overall, the majority of students (84.0 percent) continue their education in credit-bearing programs 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 2,470 of the 10,551 students enrolled in a credit program the year prior to enrolling in their noncredit program, 2,443 enrolled during their noncredit program, and 2,273 enrolled the year following the completion of their noncredit program. Additionally, there were 1,418 students enrolled in credit programs both preceding and following their noncredit enrollment; while 274 were neither enrolled in credit programs before nor during their noncredit experience.

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

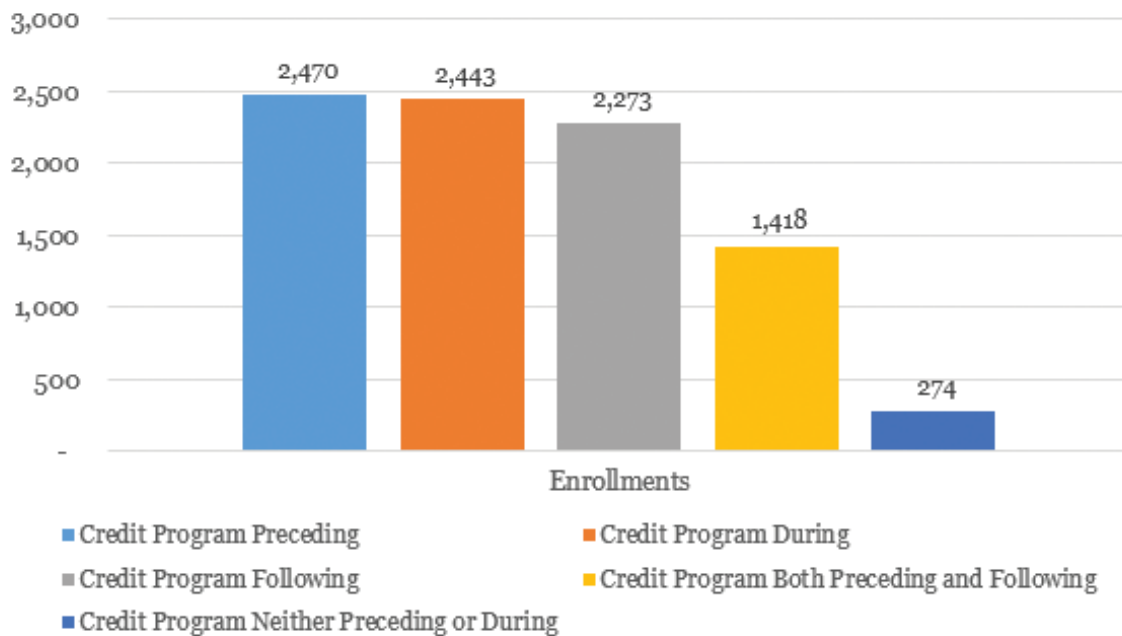


Figure 9 shows the top 10 noncredit programs that this group of students completed before continuing on with their credit-bearing program. The vast majority (N=204) of noncredit students were enrolled in health profession-related programs, with 137 of them in the nursing assistant/aide program, and another 35 in the medication aide program.

Supplementary data were collected regarding previous credit-bearing education completed by noncredit students. Overall, there were 1,097 students who had previous awards/degrees. Of those students who had degrees, there were 350 (31.9 percent) who had a bachelor's degree and 505 (46.0 percent) had a two-year degree, certificate, or diploma.

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	137	50.0
Medication Aide	35	13.0
Truck and Bus Driver/Commercial Vehicle Operator and Instructor	9	3.0
Business/Office Automation/Technology/Data Entry	8	3.0
Welding Technology/Welder	7	3.0
Emergency Medical Technology/Technician (EMT Paramedic)	6	2.0
Business Administration and Management, General	5	2.0
Hospital and Health Care Facilities Administration/Management	5	2.0
Health Aides/Attendants/Orderlies, Other	4	2.0
Mental and Social Health Services and Allied Professions, Other	4	2.0

Education Retention and Migration

The vast majority (84.3 percent) of noncredit students who enrolled in a credit-bearing program after exiting their noncredit program remained in Iowa (N=1,917). 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=102), Nebraska (N=65), or Minnesota (N=34). For those who ventured farther away, the highest concentrations of migrating students enrolled at institutions in Alabama (N=11), California (N=11), or Utah (N=10) within one year after exiting their noncredit program.

Figure 10 represents aggregate numbers for those who continued their education either in- or out-of-state one year after exit (AY 2015/2016).

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 (15.7 percent and 7.8 percent respectively). Those employed are studied in subsequent sections of this report.

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

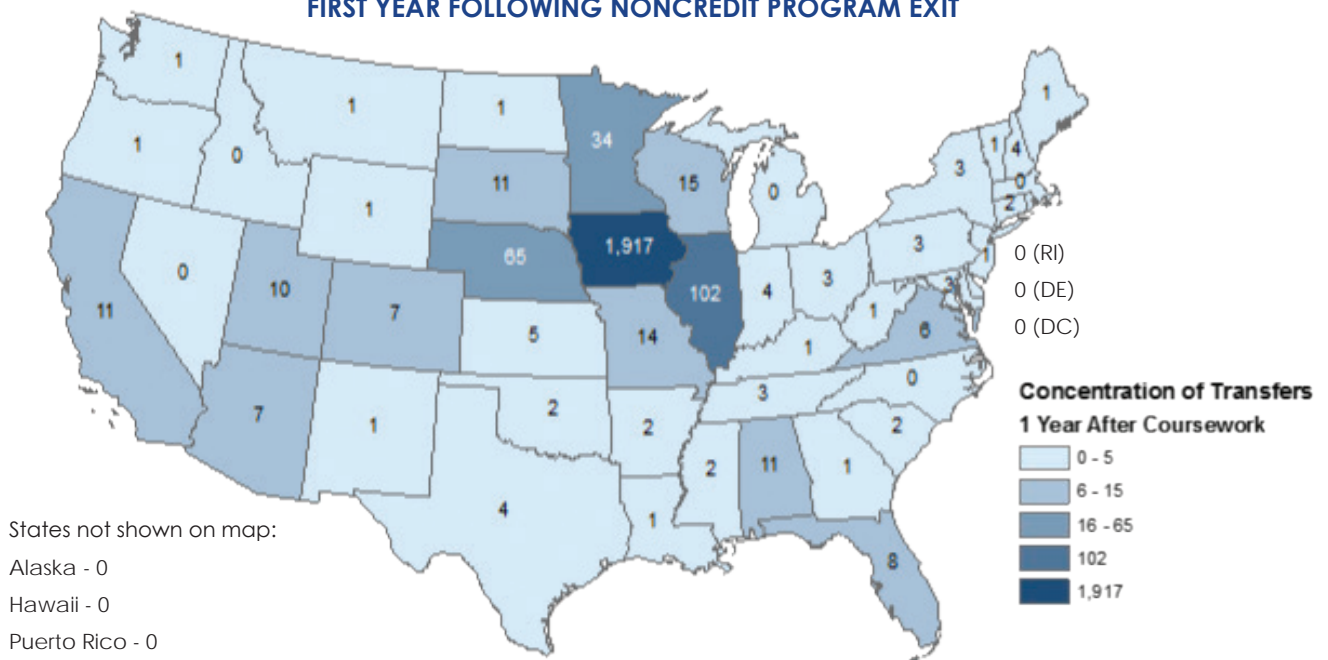


RESEARCH HIGHLIGHT

Continue Education in Iowa

Of the 1,917 noncredit students who continued into a credit-bearing program, 84.3 percent enrolled at an Iowa college or university.

FIGURE 10. AY 2015/2016 COHORT EDUCATIONAL MIGRATION, FIRST YEAR FOLLOWING NONCREDIT PROGRAM EXIT



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 are not available prior to the first quarter of 2016 (January-March 2016) due to the timing of this initial study.

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.



RESEARCH HIGHLIGHT

Employment and Wages

In the year following exit from a noncredit program, the percent of individuals who were employed increased by 15.7 percentage points and wages increased 11.8 percent.

The AY 2015/2016 cohort has a total of 10,551 students, but 90 of those students were enrolled while incarcerated. Therefore, they were removed for employment and wage calculations based on their inability to be employed during incarceration.

Using the adjusted total of 10,461 students, a total of 7,962 (76.1 percent) were employed in the year prior to enrollment in noncredit programs while 9,603 students (91.8 percent) matched employment records in the year following exit. This represents a 20.6 percent (or 15.7 percentage point) increase in employment. Figure 11 illustrates these percentages of students who matched employment prior to, during, and following enrollment in noncredit programs.

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 Figures 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 quarterly median wage for analysis 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 \$6,233 in the year prior to enrollment in noncredit CTE

programs to \$6,967 in the year following exit for the AY 2015/2016 cohort, which represents an 11.8 percent increase in 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 and accompanying data tables on the Iowa Department of Education's website: <https://www.educateiowa.gov/iowa-community-college-program-outcomes>.

FIGURE 11. OVERALL PERCENT MATCHED TO EMPLOYMENT: AY 2015/2016 COHORT

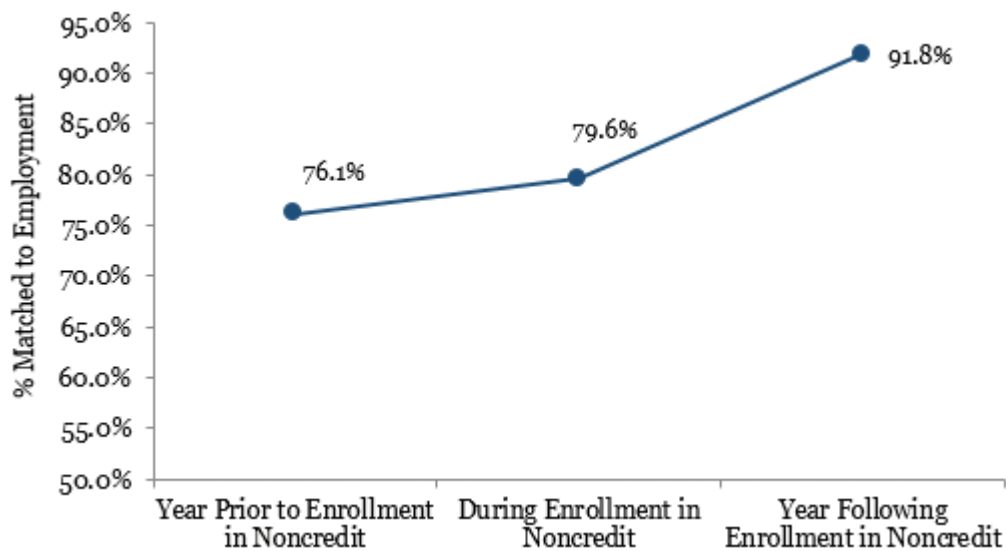
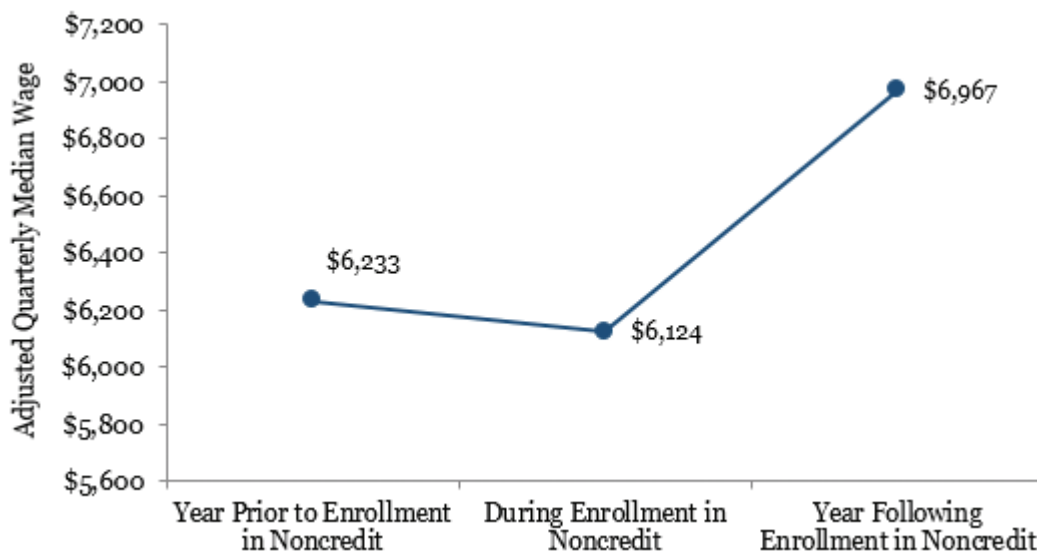


FIGURE 12. OVERALL ADJUSTED QUARTERLY MEDIAN WAGES: AY 2015/2016 COHORT



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 2015/2016 and matched to employment data in the first year following exit, remained in Iowa (84.5 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.



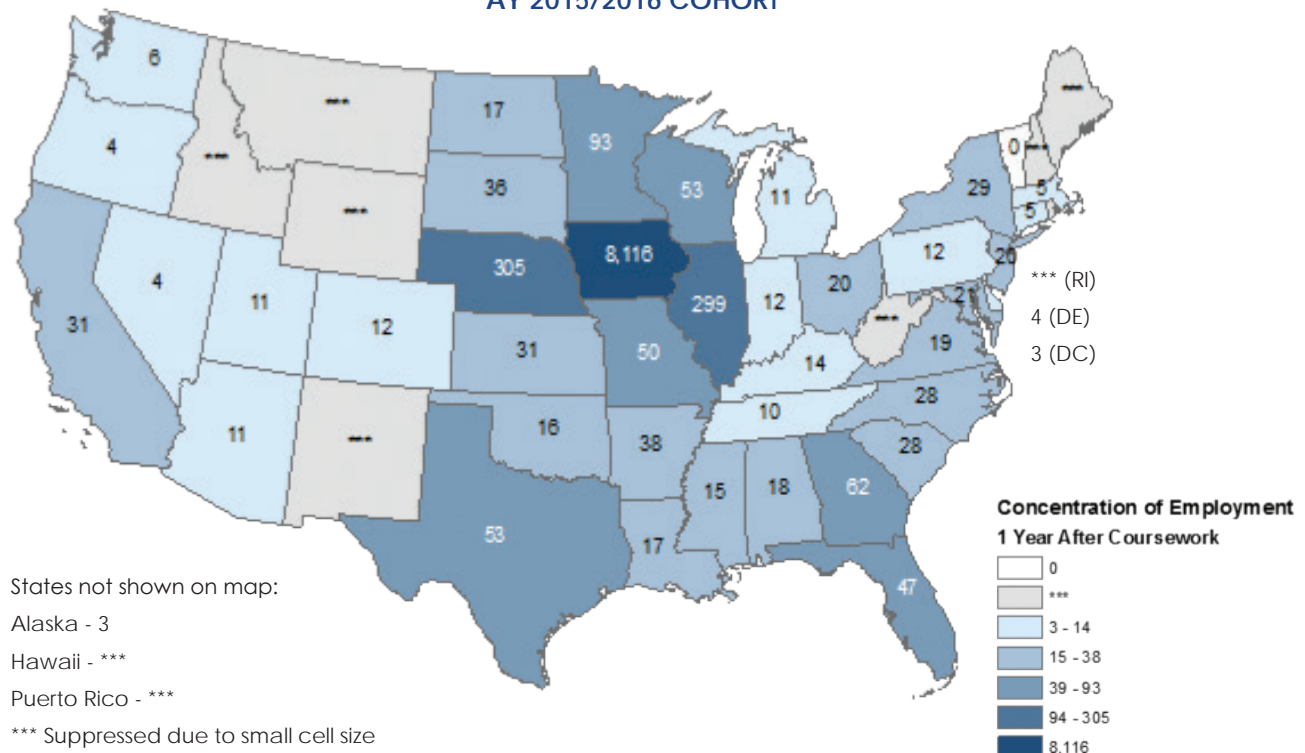
RESEARCH HIGHLIGHT

Employment in Iowa

84.5 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 Georgia (N=62), Texas (N=53), and Florida (N=47) the first year following exit.

**FIGURE 13. PRIMARY EMPLOYMENT BY STATE, FIRST YEAR FOLLOWING COMPLETION:
AY 2015/2016 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 10,461 students eligible for employment analysis in the AY 2015/2016 cohort, 53.5 percent identified themselves as male (Figure 14).

Figure 15 provides the employment and wages of AY 2015/2016 exiters by age group and gender. Females under 25 years of age matched employment at a higher rate (95.8 percent) than males in the same age group (91.5 percent), but their adjusted quarterly median wage was lower than that of the males, (\$4,006 to \$6,943, respectively). Also noted in Figure 15, 20.0 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, a larger proportion of females held previous degrees (10.7 percent) than males (7.2 percent). However, the wage disparity between females and males still exists, with women earning \$4,067 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 2015/2016 COHORT

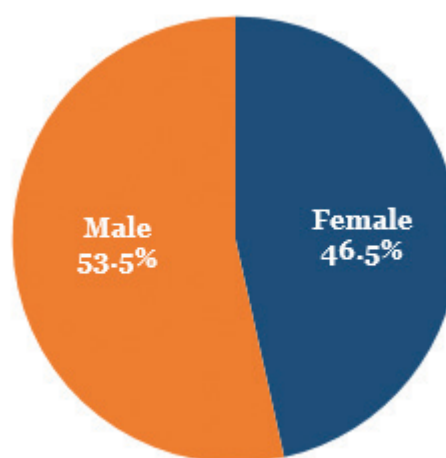


FIGURE 15. EMPLOYMENT AND WAGES BY AGE & GENDER, FIRST YEAR FOLLOWING EXIT:
AY 2015/2016 COHORT

Age	Gender	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
			#	%	#	%	
Under 25	Female	2,252	220	9.8	2,158	95.8	\$4,006
Under 25	Male	1,540	308	20.0	1,409	91.5	\$6,943
Under 25	Unknown/Not Reported	59	5	8.5	50	84.7	\$4,678
25 and Over	Female	2,566	275	10.7	2,353	91.7	\$6,903
25 and Over	Male	3,913	282	7.2	3,516	89.9	\$10,970
25 and Over	Unknown/Not Reported	131	7	5.3	117	89.3	\$10,592

Note: 2017 wages defined as October 1, 2016, through September 30, 2017.

Employment and Wages by Age and Race/Ethnicity

Figure 16 shows the breakdown of those who identified their race/ethnicity for the AY 2015/2016 cohort. Nearly three-fourths (74.5 percent) of the noncredit students identified themselves as white/non-Hispanic, while 25.5 percent identified themselves in the racial/ethnic minority category. There were 3,638 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 \$9,789, whereas the racial/ethnic minority group had an adjusted quarterly median wage of \$5,854 per quarter (32.8 percent less). This disparity holds true for both the under 25 and 25 and over age groups and consistently white/non-Hispanic age groups have higher quarterly median wages than those in the racial/ethnic minority group.

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

FIGURE 16. PERCENT OF ENROLLMENTS BY RACE/ETHNICITY: AY 2015/2016 COHORT

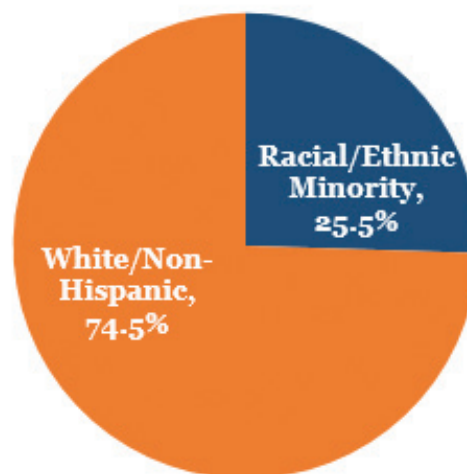


FIGURE 17. EMPLOYMENT AND WAGES BY AGE AND RACE/ETHNICITY, FIRST YEAR FOLLOWING EXIT: AY 2015/2016 COHORT

Age	Race/Ethnicity	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
			#	%	#	%	\$
Under 25	Racial/Ethnic Minority	566	33	5.8%	526	92.9	\$4,472
Under 25	White/Non-Hispanic	1,847	303	16.4%	1,761	95.3	\$5,164
Under 25	Unknown/Not Reported	1,438	197	13.7%	1,330	92.5	\$4,609
25 and Over	Racial/Ethnic Minority	1,177	64	5.4%	1,052	89.4	\$5,854
25 and Over	White/Non-Hispanic	3,233	337	10.4%	2,944	91.1	\$9,789
25 and Over	Unknown/Not Reported	2,200	163	7.4%	1,990	90.5	\$9,429

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 2015/2016 cohort in the first year prior to 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 is not included in the UI wage records, so there is no way to determine if the student actually acquired or transferred to a job which matched his or her training, but assumptions can be made by industry staffing patterns and wages.

The industry sector that employed the largest number of the noncredit students in this study was the Health Care and Social Assistance industry. Health Care and Social Assistance showed a gain in the number of employees (1,978 to 3,140), followed by Transportation and Warehousing (139 to 782). Conversely, the Retail Trade and Accommodation and Food Services industries show the largest loss of employees (911 employed to 629 in retail and 613 employed to 362 in food service).

The industries with the highest quarterly median wages in the year following completion were Public Administration (\$13,767), Manufacturing (\$12,718), and Wholesale Trade (\$10,406).

**FIGURE 18. MEDIAN WAGES BY INDUSTRY, YEAR PRIOR TO ENROLLMENT AND FOLLOWING EXIT:
AY 2015/2016 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	1,978	24.8%	\$5,740	3,140	32.7%	\$5,857
Manufacturing	1,241	15.6%	\$10,934	1,297	13.5%	\$12,718
Transportation and Warehousing	139	1.7%	\$6,947	782	8.1%	\$5,280
Retail Trade	911	11.4%	\$2,913	629	6.6%	\$4,681
Construction	521	6.5%	\$8,669	592	6.2%	\$10,175
Administrative and Support Services	596	7.5%	\$3,109	580	6.0%	\$3,975
Public Administration	418	5.2%	\$13,219	531	5.5%	\$13,767
Wholesale Trade	357	4.5%	\$9,425	473	4.9%	\$10,406
Accommodation and Food Services	613	7.7%	\$1,855	362	3.8%	\$2,481
Educational Services	317	4.0%	\$6,669	357	3.7%	\$6,113

It is important to note that some industries (e.g., manufacturing) pay higher wages by occupation than others; therefore, if a state has a higher concentration of manufacturing jobs, it would likely show higher wages overall. Conversely, if a state has a high number of retail establishments, the overall median wage may be lower.

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

Figures 19 reflects the employment and wages, by number of contact hours for those in the AY 2015/2016 cohort who were employed in the year following graduation. For example, of the 6,654 students who enrolled in 32 to 99 contact hours of noncredit courses and exited in AY 2015/2016, 92.1 percent matched employment records within the year

following exit and earned a quarterly median wage of \$7,324. Additionally, 11.0 percent had previously earned a degree prior to enrolling in the noncredit program. The percentage matching employment of this age group was the highest of the categories listed; however, all groups exceeded 90 percent employed.

FIGURE 19. EMPLOYMENT, WAGES, AND PREVIOUS DEGREE EARNED BY CONTACT HOUR, FIRST YEAR FOLLOWING COMPLETION: AY 2015/2016 COHORT

Size of Award	Number in Cohort	Previous Degree		Matched to Employment		Adjusted Quarterly Median Wage
		#	%	#	%	\$
32 to 100 Contact Hours	6,654	729	11.0%	6,128	92.1%	\$7,324
100 to 200 Contact Hours	2,600	243	9.3%	2,378	91.5%	\$5,665
Over 200 Contact Hours	1,207	125	10.4%	1,097	90.9%	\$8,121



Figure 20 illustrates the employment and wages by CIP for the 10 largest programs (by enrollment) consisting of 32 to 99 contact hours.

The bars in the figure represents the percentage of those who were employed within the first year following program exit and the dot illustrates the quarterly median wage.

The highest percentage of employment (98.3) was for those who exited from the medication aide noncredit program (CIP 512603). This group earned a quarterly median wage of \$7,212. The highest quarterly median wage (\$16,776) was for the students who exited from the occupational safety and health technology/technician program (CIP 150701). The

RESEARCH HIGHLIGHT

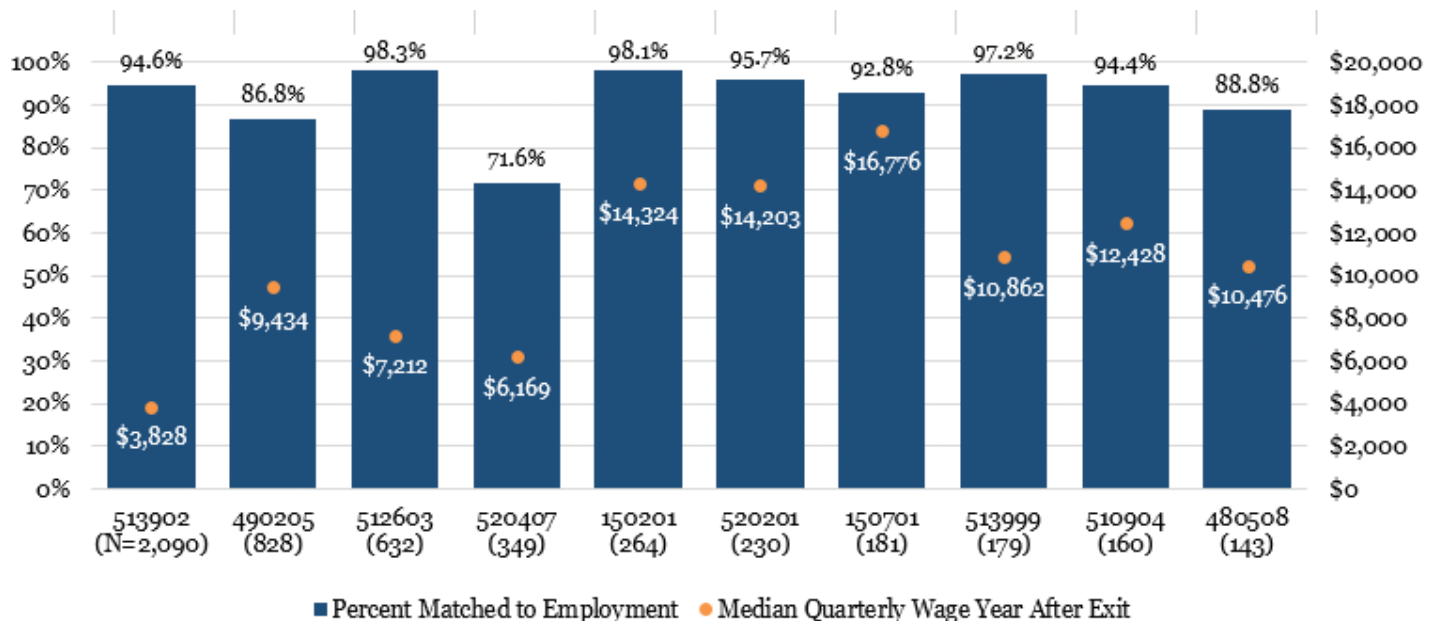
Employment First Year Following Exit

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:

- Medication Aide
- Civil Engineering Technology/Technician
- Business Administration and Mgmt.
- Practical Nursing, Vocational Nursing, and Nursing Assistant, other

employment match rate the first year following exit for this group was 92.8 percent.

FIGURE 20. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 32 AND 99 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2015/2016 COHORT



Program Legend:

- 513902: Nursing Assistant/Aide and Patient Care Assistant/Aide
- 490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor
- 512603: Medication Aide
- 520407: Business/Office Automation/Technology/Data Entry
- 150201: Civil Engineering Technology/Technician
- 520201: Business Administration and Management, General
- 150701: Occupational Safety and Health Technology/Technician
- 513999: Practical Nursing, Vocat. Nursing and Nursing Assist., Other
- 510904: Emergency Medical Technology/Technician (EMT Paramedic)
- 480508: Welding Technology/Welder

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 83.3 percent (business/office automation/technology program - CIP 520407), to 98.1 percent (HVAC maintenance technology program - CIP 470201).

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

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



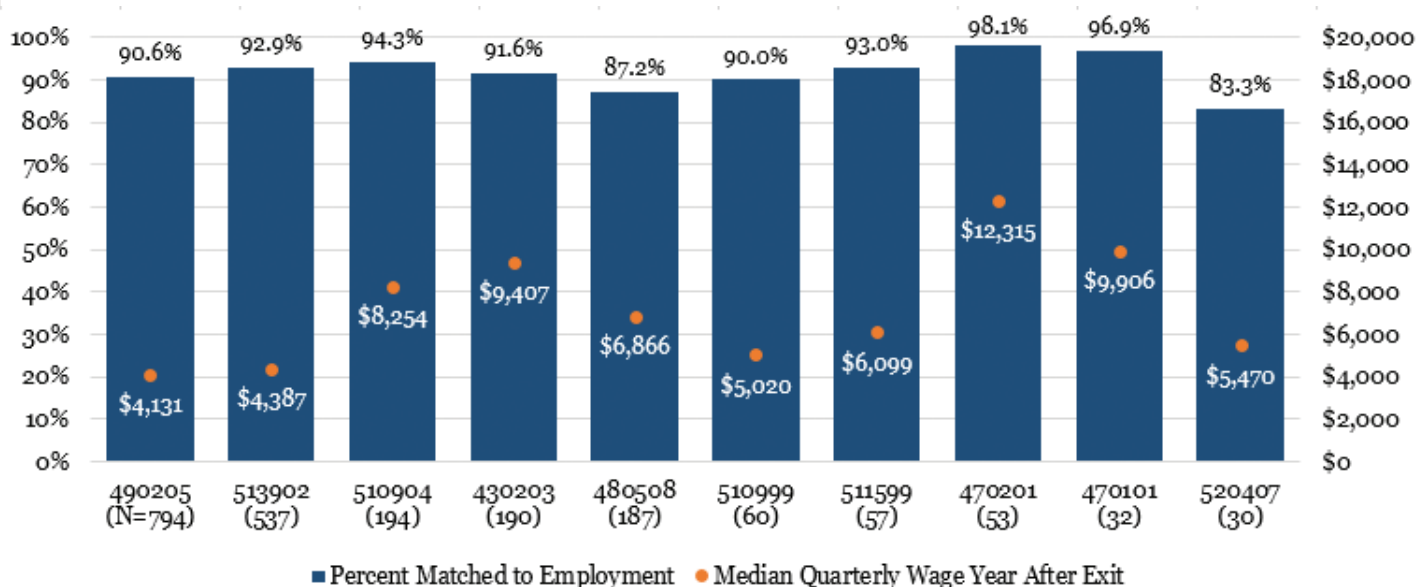
RESEARCH HIGHLIGHT

Employment First Year Following Exit

More than 95 percent of individuals in the following noncredit programs, requiring between 100 and 200 contact hours, were employed the year following program completion:

HVAC/R Maintenance Technology/Technician
Electrical/Electronics Equipment Installation/Repair, General

FIGURE 21. EMPLOYMENT AND WAGES BY PROGRAM BETWEEN 100 AND 200 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2015/2016 COHORT



Program Legend:

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

510999: Allied Health Diag./Intervention/Treatment Professions, Other
 511599: Mental/Social Health Services and Allied Professions, Other
 470201: HVAC/R Maintenance Technology/Technician
 470101: Electrical/Electronics Equipment Installation/Repair, General
 520407: Business/Office Automation/Technology/Data Entry

The programs consisting of 200 or more contact hours are illustrated in Figure 22. The employment percentage for those who exited from the electrical/electronics equipment installation/repair program (CIP 470101) was the highest at 98.2 percent, followed by the criminal justice program (CIP 430107) at 96.8 percent. Quarterly median wages for participants were also high at \$10,813 and \$11,654 respectively. The highest quarterly median wage of \$13,528 was earned by those who exited from the industrial mechanic and maintenance technology (CIP 470303), which had 90.0 percent employment in the first year following exit.



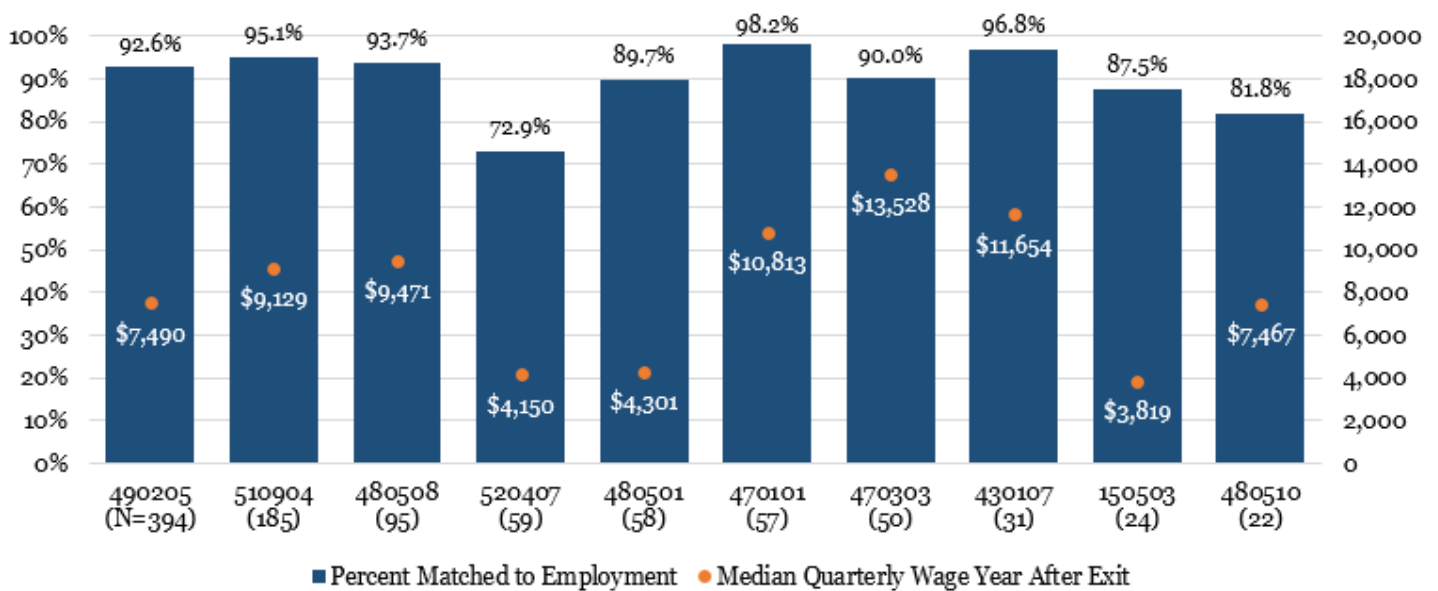
RESEARCH HIGHLIGHT

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:

- EMT Paramedic*
- Electrical/Electronics Equipment Installation/Repair, General*
- Criminal Justice/Police Science*

FIGURE 22. EMPLOYMENT AND WAGES BY PROGRAM MORE THAN 200 CONTACT HOURS, FIRST YEAR FOLLOWING EXIT: AY 2015/2016 COHORT



Program Legend:

- | | |
|---|---|
| 490205: Truck and Bus Driver/Comm. Vehicle Operator/Instructor | 470101: Electrical/Electronics Equipment Installation/Repair, General |
| 510904: Emergency Medical Technology/Technician (EMT Paramedic) | 470303: Industrial Mechanics and Maintenance Technology |
| 480508: Welding Technology/Welder | 430107: Criminal Justice/Police Science |
| 520407: Business/Office Automation/Technology/Data Entry | 150503: Energy Management and Systems Technology/Technician |
| 480501: Machine Tool Technology/Machinist | 480510: Computer Numerically Controlled (CNC) Machinist Tech. |

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. In addition, 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 cohort students in noncredit programs by career clusters, and the subsequent enrollment in credit-bearing programs, the year following completion. The data illustrates that the majority of students who continued education in credit programs were in the health science cluster (N=1,729). However, only 563 of these remained in the health science cluster upon enrolling in a credit program.

One notable limitation to identifying the path to a credit program is that there are a number of colleges

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

Career Cluster	Noncredit Program Cluster	Credit Program Cluster
Agriculture, Food, and Natural Resources	4	39
Architecture & Construction	40	12
Arts, Audio/Video Technology, and Communications	9	7
Business Management & Administration	67	64
Education and Training*	10	378
Finance	3	14
Government and Public Administration	13	4
Health Science	1,729	563
Hospitality and Tourism	9	4
Human Services	17	60
Information Technology	15	20
Law, Public Safety, Corrections, and Security	82	38
Manufacturing	107	39
Marketing	0	1
Science, Technology, Engineering, and Mathematics (STEM)	0	125
Transportation, Distribution, and Logistics	168	18
Unknown**	0	887
Total	2,273	2,273

*Includes Liberal Arts/General Studies Transfers **Unknown, no data in NSC

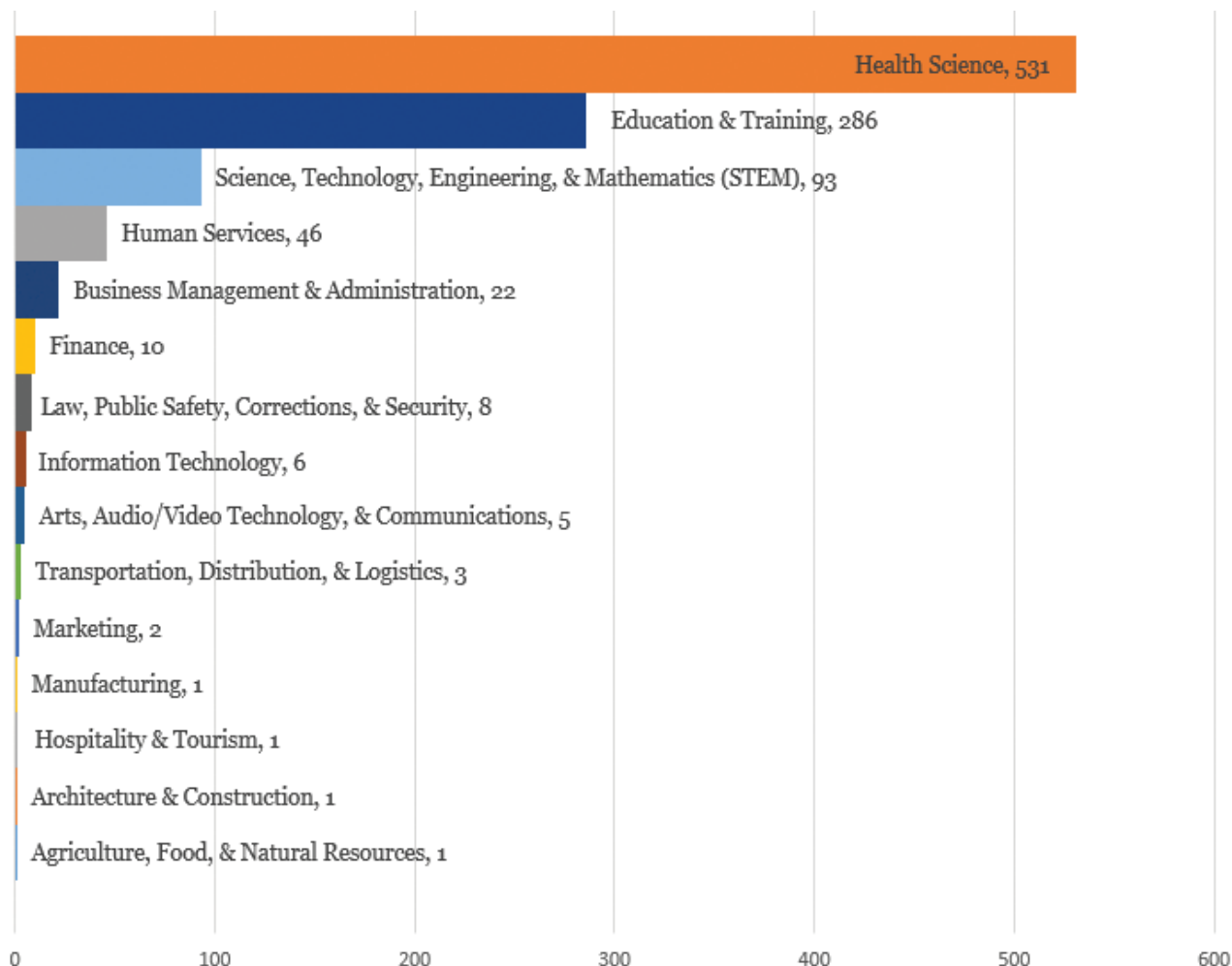
that do not report the credit program CIP code in the NSC system. Though the institution name, type, and state are contained in the data, the CIP code, and/or program title variables are left empty, therefore unknown.

While Figure 23 shows that 563 noncredit students entered the credit-bearing health science cluster, further analysis found that the majority of these students had been initially enrolled in the noncredit health science cluster as well. In fact, Figure 24 illustrates that 531 of the 563 students had previously

been enrolled in the health science noncredit program. Therefore, 32 students who were previously enrolled in a noncredit program under a different cluster actually entered into the health science cluster once they enrolled in a credit-bearing program.

Note: The national career cluster system identifies liberal arts programs as a part of the education and training career cluster. This explains a large number of students listed under the cluster.

FIGURE 24. NONCREDIT ENROLLMENT BY CAREER CLUSTER FOR THOSE WHO ENROLLED IN A CREDIT-BEARING PROGRAM IN THE FIRST YEAR FOLLOWING EXIT: AY 2015/2016



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 25 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 26, on the next page, illustrates the relationship between career clusters and industry sectors for the AY 2015/2016 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 depict 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 26, resulting in less ribbons.

Another important 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 25 and 26.

FIGURE 25. CIRCOS VISUALIZATIONS

Career Cluster

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



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

Cluster to Industry

As mentioned previously, students enrolled in the health science career cluster represent the largest portion of the AY 2015/2016 cohort, which explains why the aqua (mid left) sector of Figure 26 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.

FIGURE 26. CLUSTER TO INDUSTRY MAPPING FOR AY 2015/2016 NONCREDIT EXITERS



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

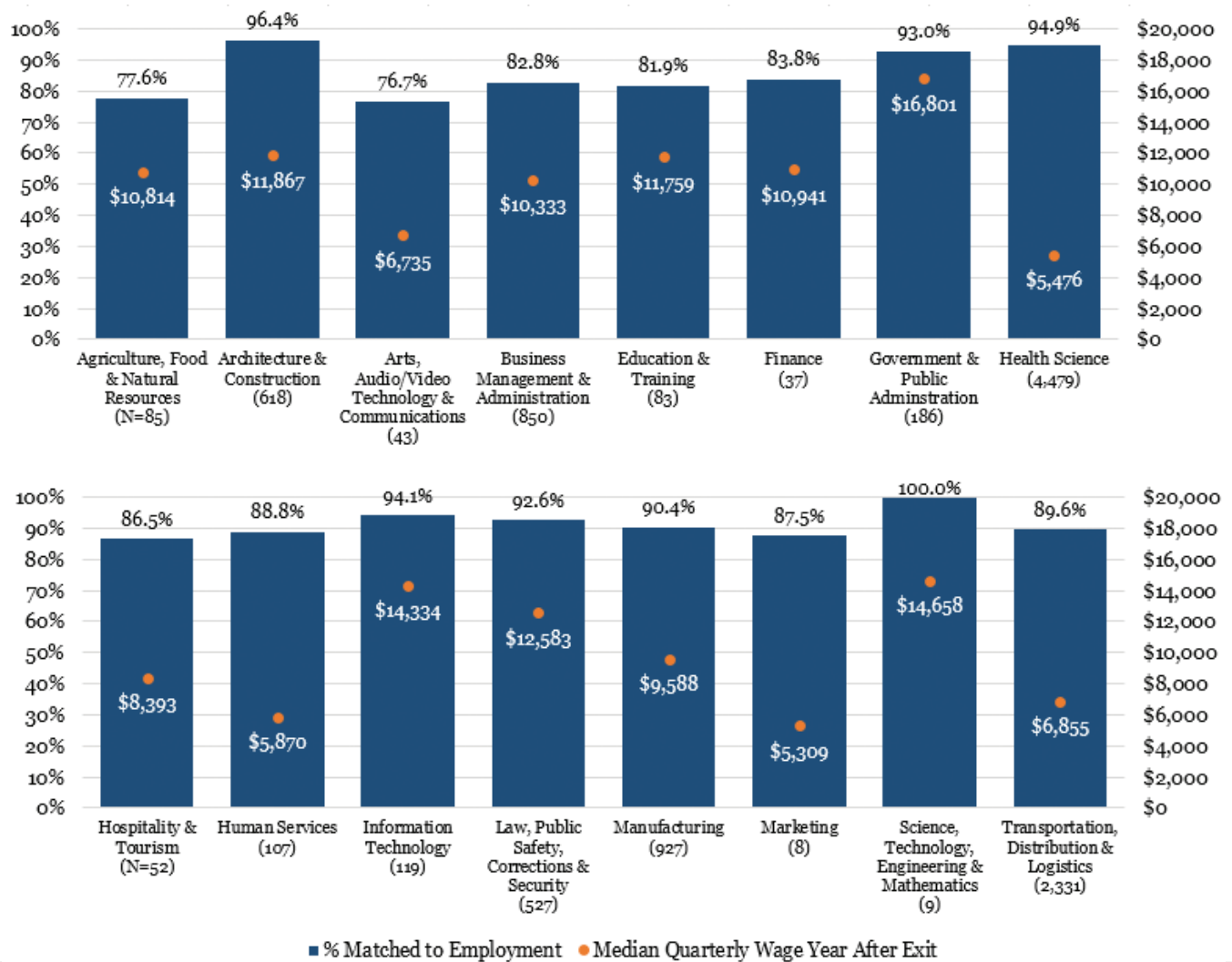
Employment by Career Cluster

Figure 27 illustrates the employment and wage outcomes of the AY 2015/2016 noncredit students by career cluster in the first year following exit. All of the nine students in the noncredit STEM cluster were employed upon exiting, and earned a median quarterly wage of \$14,658. The next highest employment percentage was achieved by the 618 students in the architecture and construction career cluster (96.4 percent) who earned a quarterly median wage of \$11,867. In the most popular health science cluster, 94.9 percent of the 4,479 exiters became employed

and earned a quarterly median wage of \$5,476, which is less than half of those in the STEM and architecture and construction clusters.

One of the lowest rates of matching employment was for students from the agriculture, food, and natural resources cluster (77.6 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 27. EMPLOYMENT AND WAGES BY CAREER CLUSTER, FIRST YEAR FOLLOWING EXIT:
AY 2015/2016 COHORT**



Occupational Supply and Demand

There have been a multitude of studies attempting to pinpoint the root causes of the gap between the supply and demand for workers. Some claim there is simply a shortage of people available for work in Iowa, while others assert the majority of job applicants lack the appropriate skills needed to perform the required duties of vacant positions. The majority of the in-demand jobs in Iowa require some education or training beyond high school, but less than a four-year degree.

Education or training beyond high school is the new minimum to earning a living wage. Careers, both today and in the future, require advanced knowledge or technical skills. The goal of the Future Ready Iowa initiative, referenced earlier, is for 70 percent of Iowa's workforce to have received education or training beyond high school by 2025 in order to meet this workforce requirement. The next few pages of this report are intended to illustrate how both credit and noncredit programs impact progress toward Iowa's education and training goal.

Figures 28, 29, and 30, on the following pages, illustrate supply, demand, and the gap between community college noncredit and credit completers and their related occupations for the AY 2015/2016 cohort of students. The presented in-demand occupations do not comprise a comprehensive list.

The number of community college completions (both noncredit and credit) represent the supply of workers. The CIPs were obtained from the datasets for each

student and then crosswalked to the occupation that most closely matched their program of study.

Iowa's long-term occupational projections (2016-2026)[4] were used as the primary source for the demand representation. These estimates of the expected demand for individual occupations are based on the average annual employment levels by industry for the starting point and target years.

Levels for determining high/low wage and demand in Iowa are based on an average occupational growth rate for all occupations of 0.9 percent, and the 2017 average hourly wage of \$20.93 per hour. The state average occupational growth rate and the average wage are illustrated as intersecting vertical and horizontal lines, respectively, creating the following four separate quadrants:

High Demand/High Wage (>0.9; >\$20.93)

High Demand/Low Wage (>0.9; <\$20.93)

Low Demand/High Wage (<0.9; >\$20.93)

Low Demand/Low Wage (<0.9; <\$20.93)

Note: Figures 28 through 30 do not represent all occupations as there are occupations that have community college completions and job openings, but no projected demand. Additionally, there may be too few businesses or jobs to sufficiently project market demand for the next 10 years, so these are not represented due to confidentiality/suppression. The annual longitudinal study of community college credit program outcomes and data tables, in their entirety, are in a separate report, *Education Outcomes: Certificate, Diploma, and Associate Degree Programs* [5].

[4] Iowa Workforce Development, Labor Market Information Division, (2018). *Iowa's Long-Term Occupational Projections (Forecast)*. Found at: <http://www.iowaworkforcedevelopment.gov/occupational-projections>.

[5] Iowa Department of Education, Community College and Workforce Preparation Division, (2018). *Education Outcomes: Certificate, Diploma, and Associate Degree Programs*. Found at: <https://educateiowa.gov/documents/program-outcome/2018/03/cc-education-outcomes-report-ay-2012-16>.

FIGURE 28. CREDIT AND NONCREDIT COMPLETIONS BY RELATED OCCUPATION:
AY 2015/2016 COHORT

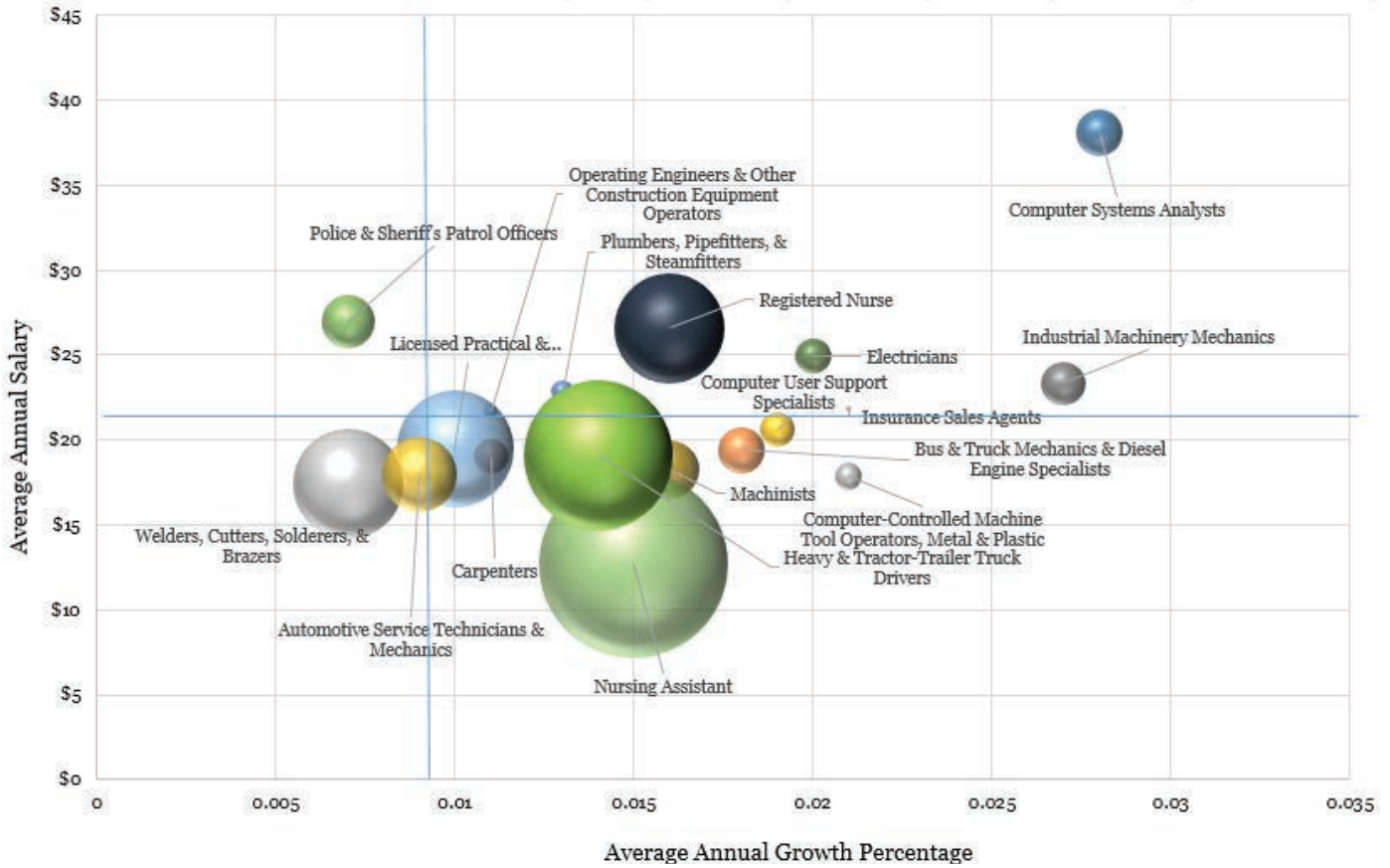


FIGURE 29. ANNUAL PROJECTED IN-DEMAND OCCUPATIONS 2016-2026

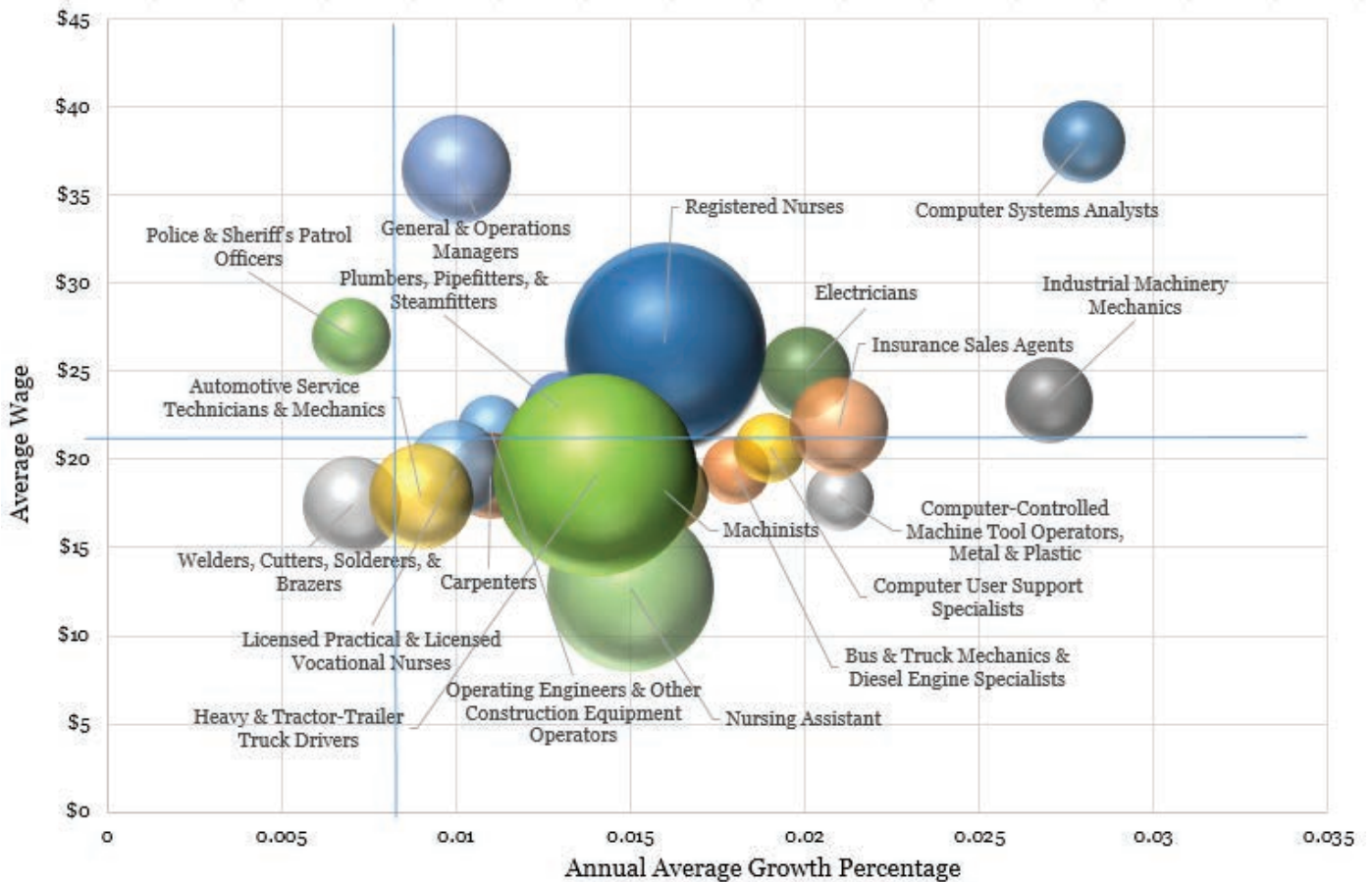
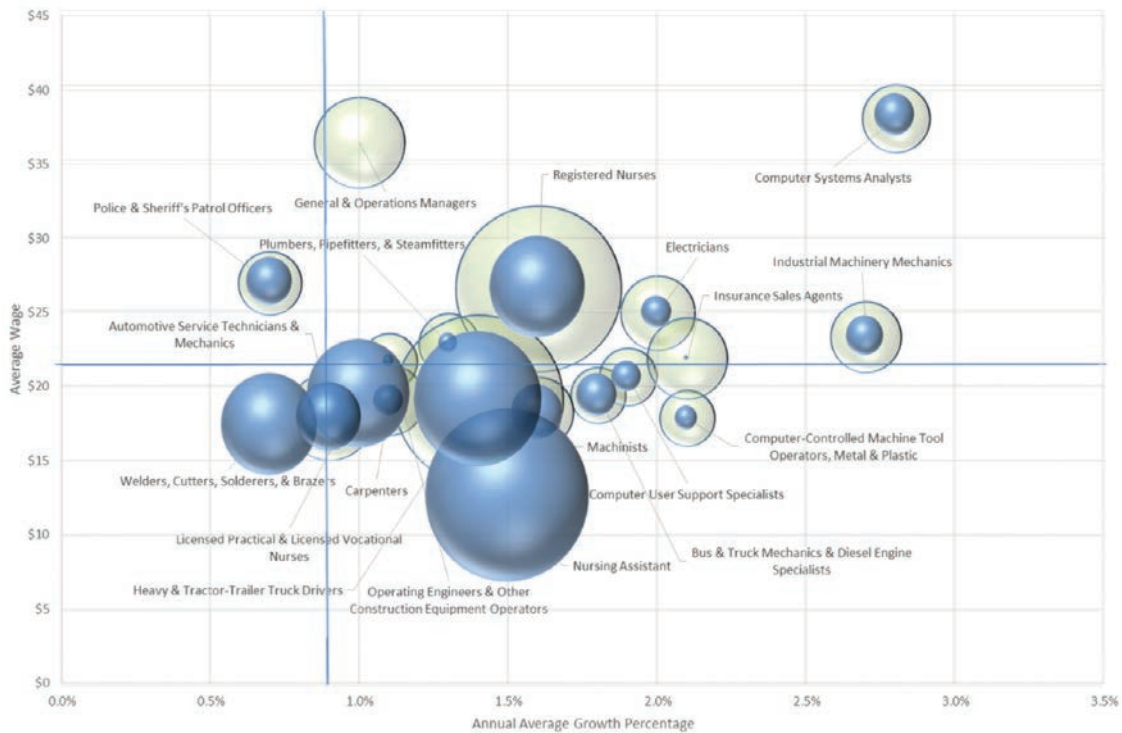


FIGURE 30. GAP OF SUPPLY TO DEMAND

OVERLAY OF PROJECTED ANNUAL DEMAND TO AY 2015/2016 COMMUNITY COLLEGE COMPLETERS



The size of the bubbles in Figures 28 through 30 represent the number of credit and noncredit completions (Figure 28) or annual projected in-demand occupations (Figure 29). The location of the bubble on the grid correlates to the average hourly wage and growth rate for each occupation. Each figure is split into four sections representing high demand/high wage, low demand/high wage, low demand/low wage, and high demand/low wage, as defined on page 30.

Using this visualization as a guide, it is apparent that the green bubbles (demand) in some cases are much larger than the blue ones (supply). This indicates an under supply of workers trained in a particular occupation or that the community colleges are not the only educational institution that offers this type of training and/or education. For example, the typical education or training for registered nursing could be either an associate degree from the community colleges or a bachelor's degree through one of Iowa's four-

year colleges/universities. In addition, while nursing assistants look to be in abundance (over-supply), some of the students who complete this type of training go on to further their education and become registered nurses rather than seek employment as a nurse aide.

Another example to highlight relates to carpenters, electricians, and plumbers. Though these trade-related careers appear to be under-supplied, this analysis does not include opportunities in registered apprenticeships across the state. This education-training partnership involves an employer sponsor hiring an apprentice and teaching him or her through on-the-job and community college training in tandem.

This data is fluid and it is imperative as a state that we continue to monitor the changes in order to meet our goal of 70 percent of Iowans with some postsecondary education and training by 2025, while keeping aligned with the employer demand.

Methodology and Research Limitations

Noncredit Cohort Formation

1. Starting Cohort: Iowa Community College Management Information Systems (MIS) data base of Noncredit Enrollments for AY 2015-2016 - We use 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.
2. Exclude students without valid SSNs, first and last names, and dates of birth (DOB) - We have to limit our research 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 - We identify CTE enrollees 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 non-credit 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 - We use "under 25" and "25 and older" categories based on each student's age as of the middle of the AY 2015-2016 (January 1, 2016) year.
3. Correctional Facilities - We use MIS data codes to establish whether a noncredit student was enrolled while in a correctional facility.
4. Previously Received Credit Award - We utilize a five-year timeframe and NSC data 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 varies 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 2017Q4 (October 2017 - December 2017) levels (CPI-u = 246.6187) 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 (2017Q4), 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.
- » 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.

Supply and Demand Methods

Future occupational demand was defined using the annual growth rate of Long-Term (2016-2026) Iowa Occupational Projections as produced by Iowa Workforce Development. These projections use the standard occupational classification (SOC) system and can be categorized at different levels (two-, three-, five-, and six-digit), where moving from a lower to higher level indicates more disaggregation in the occupational structure (i.e., Management Occupations [2-digit] to Construction Management [6-digit]).

The objective of the analysis was to determine occupational demand and ascertain the strides that Iowa community colleges have made to meet this demand. To do so, requires linking occupations (SOC codes) to education programs (CIP codes). For this, a crosswalk is required linking the two, such as the one available from the National Crosswalk Center®. Additionally, the National Career Clusters® Framework links every CIP code to one of the 16 career clusters, though such an assignment was not done for SOC codes. To fill this gap, the National Research Center for Career and Technical Education (NRCCTE), began by assigning one of the 79 career pathways (where each pathway was associated to a unique career cluster) to each of the SOC codes, thereby linking a SOC code to a specific career cluster. Since the CIP-cluster assignment was done separately from the SOC-pathway-cluster assignment, discrepancy between the two sets of assignments are likely. How this might impact the CIP-SOC linkage needs to be taken into consideration.

Several additional pieces of information required consideration in order to link occupations to education programs more precisely:

1. Identifying which CIP-SOC linkage has the same cluster assignment.
2. There are many instances when the CIP-SOC linkages are not one-to-one. In those instances, the CIP-SOC linkage chosen showed the greatest precision (i.e., the education and training a graduate receives permits direct entry into the occupation (SOC) with which the education program (CIP) is linked).
3. There were occupations for which the minimum education requirement for entry was either a high school degree or a bachelor's degree. However, Iowa community colleges offer education programs that lead into these occupations, and these occupations were included in the crosswalk after reviewing information about work experience and on-the-job training requirements.
4. There are occupations that were listed as "all other." These were excluded from the crosswalk.

Taking these additional pieces of information into consideration, the crosswalk linking SOC codes to CIP codes at the six-digit level was developed. For brevity, this crosswalk is called Iowa Pipeline Occupation to Education Crosswalk (IPOEC).

With IPOEC in hand, the total number of AY 2015/2016 noncredit completions associated with each pipeline occupation (two-digit) category was obtained. For each of the occupational categories, the corresponding projected employment demand was obtained. Levels for determining high/low wage and demand are based on an average Iowa occupational growth rate for all occupations of 0.9 percent and on the 2017 Iowa average hourly wage of \$20.93.

The state average occupational growth rate and the average hourly wage are illustrated as intersecting vertical and horizontal lines, respectively, creating four separate quadrants:

High Demand/High Wage (>0.9%; >\$20.93)

High Demand/Low Wage; (>0.9%; <\$20.93)

Low Demand/High Wage; (<0.9%; >\$20.93)

Low Demand/Low Wage. (<0.9%; <\$20.93)

Iowa's community college AY 2015/2016 noncredit completions by occupational category were placed across the demand/wage grid as bubbles, where the placement of the bubble shows which demand/

wage quadrant the completions reside. The size of the bubble approximates the number of completions within that quadrant (Figure 28). Similarly, statewide Iowa annual projected job openings by occupational category were placed on the same demand/wage grid, where the placement of the bubble shows which demand/wage quadrant the projected occupations are needed and the size of the bubble approximates the number needed for the projected occupations within that quadrant (Figure 29). It is important to reiterate that only those occupations relating to community college education and training are used in aggregate for this chart, all others have been excluded from the totals.

Supply and Demand Limitations

Throughout the report, there are occupational categories which may have awards but no projected demand. This does not mean there are no projected job openings in the category; rather it indicates there are too few businesses or jobs to sufficiently project market demand for the next 10 years.

Due to confidentiality restrictions, certain occupations were not included in the report. Conversely, there will be occupational projections with no associated completions. Since the completions are inclusive of all noncredit CTE completions received at each community college, this indicates that the college either granted no awards in that particular occupational category or the training is an apprenticeship program.

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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>.

Table 1 - Overall Employment and Wages

Table 2 - Overall Employment and Wages by State of Employment

Table 3 - Overall Employment and Wages by State of Employment (Combined)

Table 4 - Overall Employment and Wages by Industry Sector of Employment

Table 5 - Employment and Wages by Gender

Table 6 - Employment and Wages by Gender by State of Employment

Table 7 - Employment and Wages by Gender by State of Employment (Combined)

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Table 9 - Employment and Wages by Gender by Age

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Table 24 - Employment and Wages by Career Cluster by State of Employment

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

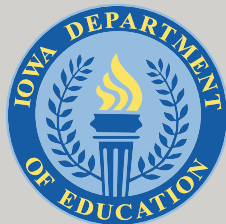
Table 27 - Employment and Wages by Program

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

Table 29 - Employment and Wages by Program by State of Employment (Combined)

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.